Aviation Education News

A Resource for Educators

Distributed Quarterly to Promote Aviation Education and Awareness in Virginia

November 2001

In this Issue:

Sept 7 - Sept. 30, 2001

Scholarship Challenge Flight Completed

How many single engine aircraft carrying a single pilot that have circumnavigated the continental United States do you know of? Probably none -- until now!

Dr. Paul W. Devore, President of the Hart Field Coalition and a Professor Emeritus with West Virginia University, was the pilot of the 1967 Mooney Executive 21 aircraft that completed this amazing flight this past weekend.

The flight, called the Scholarship Challenge Flight, is the kickoff of a campaign by Hart Field Coalition, Inc. to create aviation education and training scholarship opportunities to benefit the youth in Appalachia. It also sought to promote General Aviation both locally and nationally.

The next to last stop of the flight was at the **Hanover County Municipal Airport** north of Richmond. Dr. DeVore spent Saturday night (Sept. 29) at Hanover and took off early Sunday morning for his home base of Morgantown Municipal Airport, Hart Field, (West Virginia) where he was greeted by friends and family.

Flight Statistics

24 days
58:31 flight hours
7,367.2 nautical miles
40 different airports
34 border states
36 total states (including Washington, D.C)

See the route of flight on page 4.

While the flight was designed to draw attention to the need for aviation education and the importance of general aviation, following the events of September 11, the focus of the flight changed. *"We intended to involve the media at each stop and make each landing an event," said DeVore. "But we decided to keep the flight low-key in the end and make it more of a statement about freedom - freedom to fly, freedom of movement, our personal freedom."*

For more information about the Hart Field Coalition and The Scholarship Challenge Flight visit: www.hartfieldcoalition.org

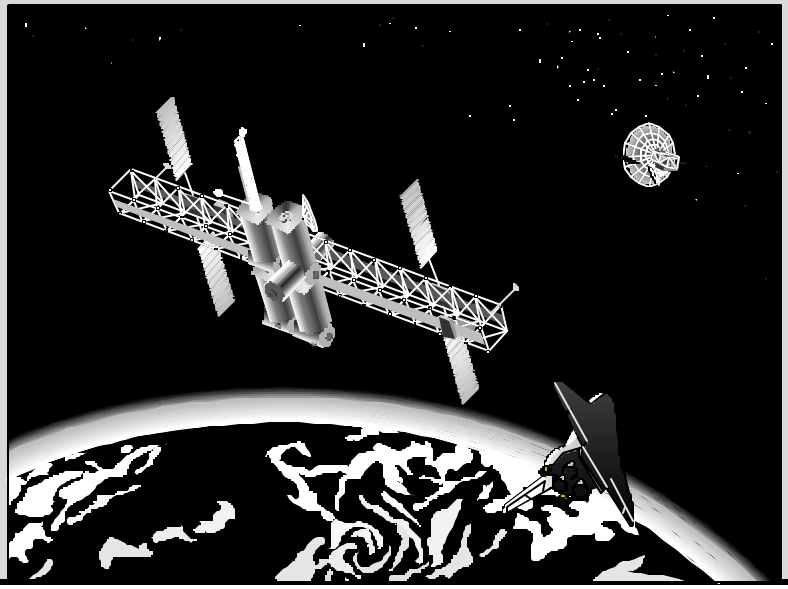
PRESIDENT'S NOTES

The NASA Langley Research Center's Office of Education (OEd) is working in collaboration with the Virginia Department of Aviation which is an excellent way to maintain two-way communication between federal and state aviation education concerns.

NASA Langley is anticipating providing two teacher workshops, a 2-week NASA Education Workshop (NEW) for 5th thru 8th grade (July 7-20, 2002) & a 2-week NEW rural initiative (K-12) (August 4-16, 2002). The first day of each program is conducted at a Fixed Base Operation "Flight School". Last year the professionals at Cardinal Pilot Shop (Mr. Roger Leonard) at the Suffolk Airport were kind enough to provide a truly exceptional program for each. I am anticipating working with him and his professional instructors again for the oncoming year. I have included the principles of flight into these programs as a vehicle for the teachers to experience firsthand, the principles of aeronautics so they could strengthen the mathematics and science skills of their students by using flight as a "hook" to catch and hold the attention of their students. These programs are open to public and private school teachers in the elementary, middle and high school grades. An application is available on the web at http://education.nasa.gov/NEW or email new@nsta.org. The date that applications will be due is tentatively February 20, 2002.

We are also conducting two 2-week pre-service NEW workshops (Pre-Service Teacher Program) for teacher candidates from colleges and universities. For information on the Pre-Service Programs go to http://edu.larc.nasa.gov/pstp. There will be a total of 50 teachers and 40 teacher candidates that will be participating here at NASA Langley. There are 10 NASA Centers nationwide, so there will be at least 10 core programs and 4 special programs. They will provide 350 teachers nationwide an opportunity to participate in an all expenses paid 2-week workshop, with graduate credit available at instate tuition.

Peter D. Thomas
Aerospace Education Project Manager (ViGYAN, Inc.)
Office of Education
NASA Langley Research Center



VASEF AVIATION EDUCATION NEWS is published quarterly in support of aviation education in the Commonweath of Virginia by the Virginia Department of Aviation.

VASEF NEWS Editor: Betty Wilson

Please send story ideas, photographs, calendar events, and other items for possible inclusion to:

Betty Wilson
Virginia Department of Aviation
5702 Gulfstream Road
Richmond, Virginia 23250-2422
(804) 225-3783
(804) 236-3635 (FAX)
wilson@doav.state.va.us (E-mail)
http://www.doav.state.va.us (Internet)

VASEF PURPOSE

The Forum is a non-profit organization to promote and foster aviation and space education among public and private schools, colleges and universities, and community and civic groups, and to promote increased public understanding of aviation and space and their economic, social, and career values in our society and in the Commonwealth of Virginia.

University Aviation Design Competition Winners Named

NASA, the Federal Aviation Administration and the Air Force Research Laboratory (AFRL) awarded honors to four university teams for their innovative general aviation designs. The winners of the National General Aviation Design Competition were recognized at a ceremony held at AirVenture 2001, the Experimental Aircraft Association's Annual Convention and Fly-In held this past July at Oshkosh, Wisconsin.

The competition calls for individuals or teams of U.S. students to participate in a major national effort to rebuild the U.S. general aviation sector. Participants are challenged to meet the engineering goals of the Advanced General Aviation Transport Experiment (AGATE) project. For the purpose of the contest, general aviation aircraft are typically defined as single or twin engine (turbine or piston), single-pilot, fixed-wing aircraft for two to six passengers. NASA, the FAA and AFRL hope to stimulate breakthroughs in technology and their application in the general aviation marketplace.

The first place award was presented to a team from Embry Riddle Aeronautical University, Daytona Beach, Florida. The team's design seeks to retrofit the popular Cessna 182 Skylane with a modern, turbocharged, reciprocating diesel engine that runs on readily available Jet A fuel. The review panel, comprised of representatives from NASA, FAA, industry and academia, praised the design for its practicality and rated the design effort as outstanding overall.

The first place award provides a total of $3,000.00 to Embry Riddle's design team members and a $5,000.00 award to the University's Aerospace Engineering Program. James Ladesic and Reda Mankbadi served as the team's faculty advisors.

Second place honors went to Pennsylvania State University, University Park. The team's design, "Defiance," features a four-place, single engine, turbofan-powered, general aviation aircraft. The twin-tail-boom, twin-vertical-tail layout uses both aluminum and modern composite materials, and features advanced aerodynamics, avionics, and support systems. The second place award provides a $2,000.00 prize to the team. Hubert C. "Skip" Smith was the team's faculty advisor. Penn State has won a place award in every year of the competition.

"Vector Evolution"

The third place award went to the **University of Virginia, Charlottesville**, for a design dubbed "Vector Evolution." The design combined the fast, high-altitude performance of a business jet with the short takeoff and landing performance of a typical general aviation aircraft. The team's faculty advisor was James McDaniel. For third place, the team will share a $1,000.00 prize.

"Tempus"

An honorable mention in the General Aviation Design Competition went to **Virginia Tech, Blacksburg**, and its collaborating international partner Loughborough University, Leicestershire, United Kingdom, for "Tempus," an aircraft with a 3,600-nautical-mile range. The team set a goal of efficient, affordable and comfortable transportation between international destinations. James Marchman was the Virginia Tech faculty advisor, and Gary Page and Lloyd Jenkinson served as faculty advisors at Loughborough.

The best use of Air Force-developed technologies award was also presented to the **University of Virginia's** "Vector Evolution" design. The team received an additional $3,000.00 from the Air Force Research Laboratory. The technologies included: wireless flight controls; non-hydraulic, electric actuator systems; and aerogel and serrated engine-nozzle-edge noise-reduction techniques.

The competition for the 2000-2001 academic year was managed by the Virginia Space Grant Consortium. The AGATE project will end in September 2001, and the new competition will be managed by the General Aviation Programs Office at NASA's Langley Research Center, Hampton, Virginia.

For more information on the 2002 Competition visit:
http://sats.larc.nasa.gov/competition/index.html

Route of the Scholarship Challenge Flight with destination in each state marked.

School Mailing on it's Way

The annual Virginia Department of Aviation's all-school mailing should be arriving at each of Virginia's public schools very soon. Among the programs included in this year's mailing:

2002 International Aviation Art Contest

The theme of the 2002 Contest is "Silent Flight." The contest is open to young people ages 6-17. All artwork must be postmarked no later than January 7, 2002.

2002 Aviation Teachers Grant Program

A brochure for the 2002 Aviation Teacher's Grant program is included. The application deadline is November 30, 2001. Grants for aviation-related projects may be funded up to $250.00.

2002 NCASE Teachers Scholarship Program

The Virginia Department of Aviation plans to sponsor two teachers to attend the 2002 National Congress on Aviation and Space Education scheduled for April 3-6, 2002 at the Crystal Gateway Marriott Hotel in Arlington, Virginia. As the premier aviation education conference, it features motivational speakers and plenty of hands-on activities.

2002 VASEF Aviation Scholarship Program

Beginning in 2002, a scholarship in the amount of $1,000.00 will be awarded each year to a Virginia high school senior planning a career in aviation. All the details are included in the mailing.

If you are interested in any of the above programs but don't receive the mailing, contact the Virginia Department of Aviation at (804) 225-3783 or (804) 236-3624.

National Air and Space Museum Calendar

Wednesday, October 17, 2001
New Exhibition Opens
"Voyage ---A Journey Through Our Solar System"
A new permanent outdoor exhibition premiers. The exhibition, a model of the solar system, consists of thirteen 8.5-feet-tall stainless steel stations, spanning 650 yards along Jefferson Drive, between the National Air and Space Museum and the Smithsonian Castle. In nine of these stations, three-dimensional model planets and their moons are laser-sculpted in crystal. The remaining stations feature the Sun, asteroids and comets.

More information can be obtained on the Voyage Web Site at www.voyageonline.org. *Voyage---A Journey Through the Solar System* is a collaboration between the Smithsonian Institution, the Challenger Center for Space Science Education and NASA.

Saturday, October 27, 2001
Monthly Star Lecture
"Voyage Through the Solar System"
With the premiere of *Voyage---A Journey Through Our Solar System*, a new outdoor exhibition, Dr. Jeff Goldstein, project director, will discuss the science involved in the exhibition. Before the lecture, experience this magical journey located on the National Mall just outside the Museum. Public telescopic observing follows the Monthly Star Lecture, weather and time of sunset permitting.
6 p.m., Einstein Planetarium, second floor.

Thursday, November 1, 2001
What's New
Fireworks from Black Holes
The advent of the Chandra, the third of NASA's Great Observatories, is currently revolutionizing our understanding of jet physics. Jets are spectacular streams of particles emanating from the centers of galaxies moving at speeds close to the speed of light, into interstellar space, feeding high-energy particles to the distant radio lobes of the galaxy. In this talk, Dr. Rita Samburna, of George Mason University, will present the state-of-the-art knowledge of jets, including new results from her own work.
12:20 p.m. to 12:50 p.m., Einstein Planetarium, second floor.

General Electric Aviation Lecture
An Evening with Robert Fulton, III
Famed flying filmmaker, Robert Fulton, III, will recount childhood adventures with his inventor father Robert Edison Fulton, Jr. in their "off road" Airphibian, a "roadable" aircraft that could convert from plane to automobile in five minutes. He also will highlight his own aerial and time-lapse photography, some of which has been featured in Hollywood productions, music videos and Emmy Award-winning documentaries. Note: This lecture is free but tickets are required. Tickets are available at the Langley IMAX Theater box office. Tickets can also be obtained through Tickets.com by calling (800) 529-2440 or visiting their web site at www.tickets.com. There is a small service fee on all Ticket.com orders.
7:30 p.m., Langley IMAX Theater.

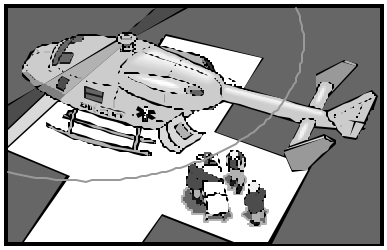
What is General Aviation?

Earlier articles in this edition of the VASEF Newsletter talk about the value of "general aviation." What is general aviation? It is generally defined as all aviation that is not commercial (airline) or military.

Why is this segment of aviation so important?

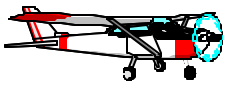
Communities benefit economically by having a general aviation airport. An airport is an asset in attracting new businesses to an area.

General aviation aircraft provide emergency services including rescuing victims and transporting seriously ill patients and organs for transplant. Many police departments now use aircraft for law enforcement. Even aerial tankers that are used to fight forest fires are a segment of general aviation.



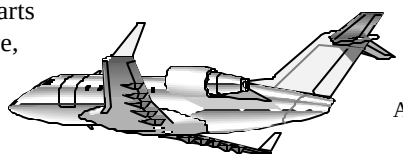
Traffic and news reports are often broadcast "live" from the air.

Where do airline pilots come from? More than half of the pilots hired by domestic airlines began their careers in general aviation.



Many people work in general aviation. From companies that provide aviation services on airports (fixed base operators who sell fuel, provide maintenance, offer charter flights and flight instruction, and rent hangars) to a variety of manufacturing jobs (building aircraft, radios, etc.) general aviation is a huge industry.

General aviation is also important to other industries in many ways. When people or critically needed parts must be somewhere, there is no substitute for general aviation in terms of time and convenience.



For individuals living in isolated areas, general aviation is a vital link to the outside world.

General aviation is also inspiring, fun, and educational. Did you know that airshows draw millions of visitors each year, making them the second most popular spectator event behind Major League Baseball? Over the course of one week, the EAA Airventure airshow, held each year in Oshkosh, WI, generally draws between 700,000 and 800,000 visitors.

General aviation is a vital mode of transportation in the United States and, while we don't always recognize it, affects each of us.

Statistics

General aviation aircraft range from two-seat training aircraft to intercontinental business jets.

General aviation is estimated to be a $17 billion industry, generating more than $51 billion annually in economic activity.

General aviation exports one-third of its production and leads the world in development of new technology aircraft.

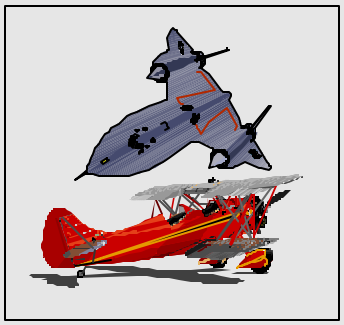
General aviation aircraft fly over 27 million hours (nearly two times the airline flight hours) and carry 145 million passengers each year.

Approximately 70 percent of all the hours flown by general aviation aircraft are for business and commercial purposes.

More than 5,400 communities rely exclusively on general aviation for their air transportation needs (scheduled airlines served about 600).

Most people learn to fly in a general aviation aircraft.

Statistics provided by the General Aviation Manufacturers Association
www.generalaviation.org



VIRGINIA AVIATION MUSEUM CALENDAR

October 6, 2001
SR-71 Forum 2001
Explore the world of the fastest, highest-flying and most intriguing aircraft on record - the SR-71 Blackbird. Participate in discussions on the development and operation of the SR-71 Blackbird. Meet author Donn Byrnes, flight test engineer and co-author of "Blackbird Rising." SR-71 Forum 2001 is included in museum admission.
9:30 a.m. - 5:00 p.m. Registration and information (804) 236-3622.

October 18, 2001
Guest Lecture Series
"The F-14 Tomcat"

Bill Schultz, retired all-weather attack systems manager for Northrop Grumman, gives an in-depth presentation on the F-14 Tomcat: the technology behind its design elements, the aircraft's development challenges, overall airframe and systems configuration, plus a brief look at its current role in Naval Air Wing operations.

October 20, 2001
Espionage Ball

Dance the night away to Bill Zickafoose and the Continentals' big band and swing tunes. Dress as your favorite spy or military personnel. 7-11 p.m. Must be 21 or over. $. Call (804) 236-3622 for advance tickets.

For further information on events and schedules, call (804) 236-3622.

Aviation Education Corner

Where is North? The Compass Can Tell Us . . .

Objectives

The students will:
Build a compass
Determine the direction of north, south, east, and west

Standards and Skills

Science
Science as Inquiry
Physical Science
Earth and Space Science
Science and Technology

Science Process Skills
Observing
Inferring
Making Models

Mathematics
Connections
Verifying and Interpreting Results
Prediction

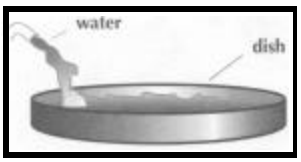
Background

The compass has been used for centuries as a tool for navigation. It is an instrument that aligns a free pivoting bar magnet (called the needle) in Earth's magnetic field.

Since the invisible lines of the magnetic field are oriented in a north/south direction, the needle will orient itself in a north/south direction. The other cardinal points of the compass (east, west, and south) are defined in relation to north.

Pilots use a compass to determine direction when flying airplanes. Boaters, hikers, and hunters are examples of other people who rely on compasses.

Materials



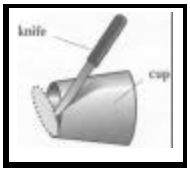
Paper clips
Fourpenny (4p) finishing nail
Shallow dish or pan 15-30 cm diameter
Liquid soap
Magic markers
Styrofoam cup, .25 L capacity
Scissors
Magnet

Management

Students can build a single class compass.
Teams of 3-5 students can build team compasses.
Students can build individual compasses.

Activity

1. Fill a shallow dish with water.



2. Cut the bottom out of the cup and float it on the water.

3. Place one drop of liquid soap in the water. This will reduce the surface tension friction and will keep the Styrofoam disk from attaching itself to the container wall.

4. Magnetize the compass "needle" by rubbing it in one direction on a small magnet.

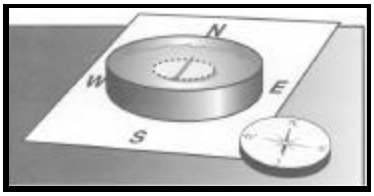
5. Place the magnetized compass needle on the floating Styrofoam disk. To minimize compass errors, place the compass away from metals, magnets, or electrical wiring.

6. Ask students to observe the compass needle as it aligns parallel with the invisible magnetic field.

7. Discuss ways to verify which end of the needle is pointing north and which is pointing south (Sunrise, sunset, shadows, commercial compass).

8. Place a piece of metal near the compass and observe changes in the needle orientation.

9. Write or cut the letter N and position to indicate the north direction. Follow this by placing the letters S, E, and W around the edges of the compass.



Assessment
Identify an object in the classroom and ask students to state what direction the object is from the compass.

Extensions

1. Hide "prizes" at different locations in the classroom. Have students locate the prizes using a compass while following teacher's directions (north, south, southeast, etc.).

2. Name different areas of the school, and have students determine the area's cardinal direction (north, south, etc.)

Activity from Aeronautics: An Educator's Guide with Activities in Science, Mathematics, and Technology Education (NASA)

Averett University

On July 1, 2001, Averett College became Averett University. The University has a Bachelor of Science or a Bachelor of Arts in Aerospace Management with a concentration in Flight Operations, Aviation Business, or Aviation Maintenance Operations. It also has a double major in Criminal Justice and Aerospace Management.

NIFA Regional Competition

This year's National Intercollegiate Flying Association (NIFA) Region Ten competition will be held at Caldwell Community College in North Carolina on October 25-27, 2001. Hampton University, Averett University, the Naval Academy, Guilford Technical College (NC), and Caldwell Community College are scheduled to participate.

Aviation Lesson Plans Online

If you're looking for another source of aviation-related lesson plans, you might try this web site. It was recommended to us as a place to find good lesson plans tailored to different grade levels.

http://www.education-world.com/a_lesson/lesson236.shtml

National Congress on Aviation and Space Education

Confirmed speakers for the 2002 National Congress on Aviation and Space Education include **Robert L. Gibson** (Captain, USN), NASA Astronaut (former). Gibson became an astronaut in August, 1979 and flew five missions.

A. Scott Crossfield, famed aviator and X-15 test pilot, had his first flight at the age of six in an oil company plane and says that he does not recall ever having desired any other career than aviation. He began flying lessons at the age of twelve, in return for delivering newspapers at the Wilmington Airport. He became a U. S. Navy fighter pilot and later pilot for the first thirty demonstration flights of the X-15.

Marta Bohn-Meyer is the Chief Engineer at NASA's Dryden Flight Research Center. While in college, Marta participated in the university-NASA cooperative education program at NASA's Langley Research Center in Hampton, Virginia. Marta began her professional career at NASA Dryden as a junior engineer. Throughout her career, Marta has worked on a number of different projects including being one of two flight engineers assigned to fly in the SR-71 (Blackbird) high-speed flight research program. She was the first female crewmember of NASA or the Air Force -- and the second woman -- to fly in one of the triple sonic aircraft.

Additional speakers have been invited and will be announced as they confirm.

Aviation & Space  Web Sites

General Aviation Manufacturers Association	www.generalaviation.org
Hart Field Coalition	www.hartfieldcoalition.org
National General Aviation Design Competition	sats.larc.nasa.gov/competition/index.html
National Congress on Aviation and Space Education	www.capnhq.gov/conference
Virginia Department of Aviation	www.doav.state.va.us

SCIENCE MUSEUM OF VIRGINIA CALENDAR

PROGRAMS
Bill Nye the Science Guy - Oct. 20

IMAX FILMS
Journey Into Amazing Caves - thru Dec. 30
China: The Panda Adventure - thru Dec. 30
Everest - Oct. 20-Dec. 30
Beauty and the Beast - opening Jan. 1, 2002

MULTIMEDIA SHOWS
Solar Showroom - thru Jan. 7

SCIENCE DAYS:
Wizard Science - October 27
Survivor Science - November 10
Space Exploration - January 12 and 19

LIVESKY: Informal "live" planetarium presentation of the month's celestial events. Third Friday of every month (except Oct.)

SKYWATCH: Third Friday of every month (weather permitting) on the front lawn.

24-Hour Information: (804) 367-0000
Box Office: (804) 367-1080
24-Hour Skywatch Information: (804) 367-8277
24-Hour TDD Information: (804) 367-9760
General Information - TDD: (804) 367-6552
Group Scheduling: (804) 367-6552
Home Page: http://www.smv.org

VIRGINIA AIR AND SPACE CENTER CALENDAR

VISITING EXHIBITS:
Women and Flight - thru December 6
On Miniature Wings - opening Oct. 6

IMAX FILMS:
The Old Man and the Sea - thru Dec. 31
Extreme - thru Dec. 31
Adventures in Wild California - thru Oct. 11
Stormchasers - thru Oct. 11

SIGMA SERIES LECTURES:
Mars: A Strange and Complex Planet - 30th Anniversary Lecture - Joel S. Levine - October 15, 7:30 p.m.

The Limits of Automation: How Far Should We Trust Software? - Nancy Leveson - November 6, 7:30 p.m.

The Seven Warning Signs of Voodoo Science - Robert L. Park - December 4, 7:30 p.m.

Call (804) 727-0900 for showtimes
Visit the Center's Home Page:
http://www.vasc.org
Visit the Teacher Resource Center Home Page:
http://seastar.vasc.mus.va.us

Calendar of Events

October 26-28, 2001

Collings Foundation B-17 and B-24 will be on display at Chesterfield County Airport. Aircraft will be arriving at approximately 3:00 p.m. on Friday and departing at 1:00 p.m. on Sunday. Memorable flight experiences and tours though both aircraft are available. For more information about ground tour times and flight schedules contact Karen B. Cline at (804) 586-3254 (noon - 7 p.m.) or the Collings Foundation at (978) 568-8924 (www.collingsfoundation.org) or call the airport at (804) 743-0771.

November 5, 7, 8, 13, 14, 15, 2001

Safety Seminars: Collision Avoidance will be held at Dulles, Hampton, Richmond, Abingdon, Blacksburg, and Charlottesville. These Aviation Safety Seminars are sponsored by AOPA, DOAV, and the FAA. For further information contact Jeanie Carter, Safety Program Administrator, (804) 236-3639, ext. 133.

April 22, 23, 24, 25, 2002

Virginia Aviation Safety Week with speaker Captain Al Haynes (of United Airlines Flight 232). Locations to be announced.

For more events check out:
http://www.doav.state.va.us/calendar.htm.

Aviation Education Supporters:

VASEF projects are funded by our membership fees and by donations from our member organizations. We would appreciate your support through membership in our organization.

_____ Regular Membership $25.00 annually (July - Dec. $12.50)

_____ Non-Profit Organization $25.00 annually (July - Dec. $12.50)

_____ Corporate Membership $100.00 annually (July - Dec. $50.00)

____ New Member _____ Renewal

Date: _____

Name: _____

Name of Organization: _____

Occupation: _____

Address:_____

City: _____State_____ Zip _____

Telephone_____

Please Return to: Tom Tyndall, VASEF Treasurer
5702 Gulfstream Road
Richmond, Virginia 23250-2422

VASEF Aviation Education News
5702 Gulfstream Road
Richmond, Virginia 23250-2422

Presorted
Standard
U.S. POSTAGE
PAID
Richmond, Va
Permit No. 949

Inside:

School Mailing

Design Competition Winners

Please Post for Teachers